



150. The Binomial Theorem: Binomial Theorem

$$(a + b)^n = \sum_{r=0}^n \binom{n}{r} (a)^{n-r} (b)^r.$$

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$$(4x - 2y)^{20} = \sum_{r=0}^{20} \binom{20}{r} (4x)^{20-r} (-2y)^r$$

Use the Binomial Theorem to expand $(2x + 2y)^5$.

$$x^5 + 5x^4y + 10x^3y^2 + 10x^2y^3 + 5xy^4 + y^5$$